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ABSTRACT

Using the methodology of force field analysis, the paper develops possible futures for special education based on current trends. Demographic forces impacting special education include age changes, ethnicity changes, the needs of emerging language minorities, specific change in the youth population, environmental factors and the incidence of dropouts. The demographic forces suggest an expansion of groups eligible for special education services of whom many will be less secure financially and increasingly likely to be from minority groups and/or non-English speaking homes. Economic and financial forces suggest the development of a two-tiered society in which issues of competency assessment, job competition, and emphasis on college preparatory programs will affect special education. Forces of professionalism are reflected in a developing shortage of specifically trained teachers, decreased access to higher education, development of alternative certification programs, and possible integration of special education with general education. Forces of technology include gene therapy, the microcomputer, computer concepts such as parallel processing and artificial intelligence, and communication technologies. Special educators need to be part of the technology decision making groups, utilizing the computer's special attributes to improve research, assess students more continuously, and improve teaching skills. Forces of societal values suggest continuing and more rapid value shifts with such trends as the movement toward educational vouchers and increased questioning of formalized education having clear implications for special education. (DB)

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Current and Emerging Forces Impacting Special Education

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CURRENT AND EMERGING FORCES IMPACTING SPECIAL EDUCATION

The year 2000 has held a certain fascination for the world of literature and the arts as evidenced by movies, books, and other media which have focused upon the "science fiction" aspects of the 21st century. However for educators, the year 2000 is a fast approaching reality, as students currently entering kindergarten will be graduating from high school that year. Educators need to begin studying the future. However, some think that the study of the future is mystical, error prone, and equated with gazing into the crystal ball or soothsaying. In reality, the study of the future can be systematic, analytical, and serve as a link between today's world and tomorrow's goals and activities. Quite powerful forecasting tools have been developed in recent years. Planners have utilized such forecasting tools as the window through which the range of possible futures can be viewed. As such, forecasting allows us to determine what we wish to stabilize, what we wish to change, what we wish to inhibit, and what we wish to facilitate.

Most educational planning has historically occurred in very short one-, three- or five-year cycles. Futurists suggest that there are three primary timeframes for studying the future. Short-range forecasts fall into the one- to five-year timeframe. Six- to ten-year periods are mid-range futures and more long-term forecasts are of eleven to twenty years. Short-range forecasts tend to be more accurate, but conversely, are significantly restrained relative to the ability to impact or alter the trends or directions of that short term. For example, some states have legislatures which meet biannually. Once that legislature has set a budget for a two-year timeframe, it is relatively difficult for planners to appreciably alter the financial resources which would be available within that short-term future. However, futurists would suggest that

mid-range forecasts provide a more ideal timeframe for planning, decision-making, and focusing for the future. Mid-range forecasts are not so close at hand that little can be done to alter the futures, yet not so distant that large numbers of variables which impact those futures are unknown or uncontrollable. Long-range forecasts provide educators with enriching and mind-expanding opportunities to explore what might be, rather than what will be. Given the rapidly changing environment of education, today's educational leaders need access to technologies which help produce and focus the short-, mid- and long-range futures.

Futurists and technological forecasters would suggest that there are two primary methods of studying the future - exploratory and normative methodologies. Exploratory methodologies make assumptions about the past and present through systematic procedures which lead planners from the past or present into the future. This is a very common methodology utilized by economists and others as they analyze trends and project from those trends of past performance to future performance. Similarly, educators have utilized such techniques to project enrollment patterns, facilities construction needs and so forth.

Normative forecasting methodologies define alternative future states, and then work backward in systematic, logical steps to the present. Needs assessment exercises frequently used within education would be described as normative in that they define a particular desired goal or state.

The goal of this paper is to orient the reader to trends which are historical in the development of special education and apply the technological forecasting methodology of Force Field Analysis to develop futures for special education.

Within the history of education in this country, special education services represent a relatively short timeline. The delivery of education was not speci-

fically defined within the constitution of this country, being a state's prerogative. The federal government's interest in education did not emerge until 1869 with the establishment of a federal unit associated with education. Public support for education through tax dollars was not legally upheld until 1892 in Kalamazoo, Michigan. It wasn't until 1953 that the federal government established an Office of Education within the Department of Health, Education and Welfare. Basically, the federal government had a single employee concerned with the provision of services for the handicapped until relatively modern times. For example in 1938, Elice Martins was the first federal official to be concerned with handicapped educational programs, followed by Jerry Rothstein in 1939, and in 1948, Romaine Mackie was installed as almost an institution associated with federal programming and services for the handicapped. Romaine Mackie operated within some very narrow government units, such as the science branch, with little evidence of interest in the handicapped. It was not until 1963 that President John F. Kennedy created a division of Handicapped and Youth, with Samuel Kirk serving as the first director. Through the activities of then Congressman Cary from New York in 1965, the Bureau for Education of the Handicapped was created by law. Only within immediate timeframes has the Office of Special Education and Rehabilitation Services been designated as a federal unit to develop and coordinate activities serving handicapped citizens and youth.

The timelines and activities which have resulted in provision of services to handicapped citizens and youth are significantly woven within the activities of parent and other advocacy groups. That is to say that there is little historical evidence that services and support of programs for the handicapped have developed spontaneously within either government or society. For example, it is more than mere coincidence that federal activities associated with

programs for the handicapped coincide with the creation and emergence of the Association for Retarded Children and the ascent to the Presidency of the United States of an individual who had a mentally retarded sibling. The emergence of specific law and policy for the handicapped is highly correlated with the development of strength and the emergent visibility of the Council for Exceptional Children as a professional organization.

Parallel to the emergence of formal organizations and politically powerful individuals who had direct interest in the handicapped was the emergence of litigation as a powerful tool placed in the hands of parents and other advocates. It should be remembered that it was not until the passage of the Elementary and Secondary Education Act in 1965, during the Lyndon Baines Johnson Administration, that broad, sweeping, legislative support was put into place, with accompanying federal appropriation for programs which serve the handicapped. Once such formal legislation was in place, it became both easier and more acceptable for legislation with significant specification, detail, and financial support to be formalized, i.e., P.L. 94-142.

Most special educators and many regular educators and parents are quite familiar with the growth of strength, power and influence in the history and trends of special education. However, futurists have defined the phenomenon of "system breaks" which have the ability to impact, influence and alter historical trends and forces. It can be contended that current and emerging trends and forces have the power and ability to appreciably alter the futures for special education and services for handicapped individuals. The last two decades have brought unprecedented change in the environment of education. Such change and the accompanying loss of stability have made it difficult for educational leaders to anticipate the major consequences of decisions. In recent times, educators have been bombarded by more than thirty national reports and many

state reports which have tried to analyze, evaluate and make recommendations relative to the improvement of education. Interestingly enough, these major reports have for the most part ignored the future, and have focused their attention almost entirely either upon the present or the past. The reports have demonstrated a near fervor for a return to the "good old days." In addition, these reports have rarely made even the slightest reference to the educational needs of the handicapped. The reality is that schools mirror the various forces operating within our society. Society has changed in terms of populations, politics, priorities, crises, types of business and industry and so forth. Such changes in American society appear to be occurring more rapidly and covering shorter cycles of time than has been historically true. Schools reflect the same concerns and have experienced similar speed of change and changing cycles. It can be argued that these changing forces represent a system break for education and, in turn, special education.

FORCES

An analysis of the following forces provides special educators with information potentially useful in exercising greater control and influence over special education futures.

Demography*

Age

This country continues to grow older. With the median age having increased to approximately 32 years for White citizens, there are more than 30,000 people in this country who are over 100 years of age. Every week, 210 Americans

***NOTE:** The author wishes to express appreciation and to acknowledge Harold L. "Bud" Hodgkinson for many of the conceptualizations and examples he has cited in various publications and speeches relative to demography and its effect upon the future state of the country and its educational system.

celebrate their 100th birthday. We have more than 2.2 million people over 85 years of age, and of significance, more than half of them voted in the 1980 presidential election. Obviously, this is a powerful and increasingly politically active group of citizens within this country. One need only look at the state of Florida, which currently has the highest percentage of people over 65, if one doubts the ability of this group to influence law and legislation. There is new legislation in Florida which triples the amount of time people have to walk across the street and cuts by one-third the time an automobile driver has to drive across the street.

Ethnicity

Not only is this country becoming older, but it is becoming less White. Black, Brown, and Asian citizens are increasing dramatically, with Hispanics representing the fastest growing population in this country (Austin American Statesman, 1986). The Census Bureau reported that as of March, 1985, the Hispanic population in the United States had increased some 16% in a little over five years, compared to the national population increase of 3.3%. Hispanics now represent 16.9 million people in the United States, an increase of approximately 2.3 million since the 1980 census. Currently there are approximately 247 Black mayors in the United States, and almost 6,000 Black elected officials. There are 3,000 elected Hispanic officials, which is quite amazing since 65% of the Hispanic population are too young to vote, and some 14% are legally ineligible to vote. The political power and influence of minorities is undeniable in a nation which, by the year 2000, will have 260 million people, one of every three of whom will be either Black, Hispanic, or Asian-American.

Language Minorities

There is a dramatic and clearly defined increase in the number of language minorities in this country (Omark & Erickson, 1983). There are fourteen or fif-

teen major language groups whose children, in 1980, comprised almost 2,400,000 students between the ages of five and fourteen. However, of significance is the fact that this number of language minority students is projected to increase by approximately one-third by the year 2000. By far, the largest language minority group is Spanish-speaking, with more than two-thirds of the entire language minority population being represented by Spanish speakers. The number of Spanish speakers in this country is projected to increase some 48% between 1980 and the year 2000, numbering more than 22 million persons by the year 2000 (Macias, 1985).

Youth

Not only is this country growing older and becoming less White, but the odds are significantly greater that its youth will be members of ethnic minority groups. In composite, it is a more frequent phenomenon for ethnic minorities to comprise the majority of public school students. For example, in the state of Texas, 51% of kindergarten students are Hispanic, with the majority of elementary age students being minority. Before one hastens to associate these demographic shifts with a specific geographic area, e.g., the Southwest, one must remember that Chicago represents the fifth largest Hispanic population center in the United States. It should also be noted that even today more than 50% of the population of the United States reside east of the Mississippi River.

These shifts in the ethnic membership of public school populations are not a temporary bubble in the population stream, but rather the emerging future. As mentioned previously, the typical White person in this country is 32 years of age. The American Black is typically 25; the American Hispanic is 22 years of age. It is a rather simple task to determine who will have the most children within the next fifteen years. The White population is basically leveling in

terms of women of child-bearing age, while the population of Hispanic women of child-bearing age is dramatically increasing. A new baby boom will occur, but this time it will be Hispanic (Hodgkinson, 1985).

Environmental Factors

Major changes have also taken place in terms of the environment for children born in this country. For every 100 children born today, twelve are born out of wedlock, forty are born to parents who divorce before the child is 18, five are born to parents who separate, two are born to parents one of whom will die before the child reaches 18, and forty-one reach 18 having been raised in a "normal" family environment.

Of children born out of wedlock, 50% are born to teen-age mothers. Almost unbelievably, very young mothers - thirteen and fourteen years of age - exist. In fact, every day in America, 40 teen-age girls give birth to their third child. Teen-age mothers tend to give birth to children who are premature, of low birth weight, with a significantly higher incidence of major health problems, and in turn, dramatically increased likelihood of having major handicaps. This group of high risk children is entering the educational system in rapidly increasing numbers.

Socio-economic status remains a consistent correlate of school learning and learning problems. The Congressional Budget Office (1984) notes that approximately 22% of children under 17 years of age live in poverty and that this number is increasing. Given the corresponding increase in the number of minority children of school age, the known disparity in income levels for minorities and Whites, and continued differentiation and representation of minorities in professional and other high income earning activities, it can be conclusively projected that the number of poor children in school will dramatically increase in both real, as well as percentage representation, between now

and the year 2000.

Drop-Outs

There are significant difficulties in obtaining reliable data relative to drop-outs. Schools and other agencies have little motivation to collect such data, because these data provide indirect, if not direct, evidence of the failure of the system to serve segments of its population. Once a youngster disappears, s/he is of little interest to the organization. However, the best data appear to indicate that approximately 14% of White students drop out, while one-fourth of Black students drop out, and more than 40% of Hispanic students do not complete high school (Boyer, 1983). It is also relatively clear that there are fairly significant regional variations in these figures, with some states, such as Minnesota, maintaining better than 86% of their students, while other states, such as Mississippi, maintain barely over 60% of their students.

In summary, demographic information indicates that this country's population is growing older and less White. Its children are less secure financially. Public school students are increasingly likely to be minority, and to come from homes where a language other than English is spoken.

Implications for Special Education

There is a clear difference between the emerging demographic characteristics of this country and the demography of special education as a discipline and in its professional organizations. Special education and its leadership are, at this time, most likely to be White, English-speaking, with special education research, training and professional development activities generally focused upon areas unrelated to the emerging demographic characteristics of the student population in this country. Issues such as ethnicity, minority status, bilingual education, second language acquisition, non-biased assessment, socio-economic status, and so forth are generally perceived by the

special education profession as unrelated to special education as a discipline. The configurations of special education and its professional organizations are not greatly incompatible with the past, but are quite discrepant with the emerging future.

Demographic variables would appear to suggest the possibility that there will be an expansion of groups eligible for special education services. Some examples of this emerging population would be victims of child abuse, juvenile delinquents, increased numbers of children situationally handicapped due to low socio-economic status, children handicapped through effects of chemical abuse by their parents, and children both younger and older than the traditional age categories currently served by special education. This expanded group of individuals with problems which inhibit their normal progression in the educational system may cause the system to respond in its historical fashion of "dumping" all children who don't fit the institutional norm into special education. These effects may result in special education continuing the current trend of serving larger and larger numbers of mildly handicapped.

Other variables such as the cost of special education and the general reduction of resources available in education may, in fact, precipitate a reaction formation to this expanded population for special education services. Such a reaction formation may cause the pendulum to swing back toward services for the more severely handicapped through a more careful delineation, primarily through policy and procedure of eligibility criteria, in order to assure that only the most demonstrable and defined handicapped individual is provided the unique specialized services of special education.

A number of courses of action appear rather obvious; however, they represent significant and difficult changes to be made within the discipline and the profession. For example, institutions of higher education, as well as others

who provide training to special educators, must initiate training programs such as bilingual special education. Such programs exist today in relatively small numbers and with small training capacity. Training programs for regular educators, as well as special educators, must begin to include content associated with second language acquisition, English as a second language instruction, bilingual education, cultural and linguistic uniqueness of student populations, and so forth. If they do not, there is less likelihood that appropriate student referral to special education will occur (Garcia & Yates, 1986).

There are other less obvious incompatibilities within the special education discipline and profession. For example, the name "Council for Exceptional Children" creates some evidence of incompatibility with the demography. That is to say, in the future, special education will be faced with an increase in the amount of activity and services, research, etc. devoted to and related to adults and older citizens. Therefore, the word "Children," as part of the title of the major special education professional organization, becomes less appropriate as this country grows older.

As it becomes more acceptable for the older handicapped individual to receive special education services, special education professional organizations may need to reach out and interface with other non-traditional service agencies for special education, specifically geriatrically associated organizations. This outreach effort will, of course, create the complexity of linkages and demand for appropriate "boundary spanners" to link the organizations. The identification and development of such boundary spanners will, in itself, call for unique demands on the special education profession.

Currently, parent and advocacy groups are no better prepared or configured than special education for the emerging changes and shifts in demography. There are fewer Whites of child-bearing age, and as the population becomes more

culturally and linguistically diverse, special education parent organizations and advocacy groups must begin to make systemic adjustments in order to remain visible, viable and influential. Just as special education has historically been powerful in the formulation of legislation and utilization of the judicial system to accomplish aims and goals for the handicapped, it must now, as a discipline and profession, recognize the growing political power of the Hispanic, the Black, the culturally and linguistically different populations in this country.

Recruitment efforts within special education at the level of pre-service, continuing education, as well as at the level of practice, must focus on bringing larger numbers of language and ethnic minority individuals into the profession in order to provide appropriate practitioner/researcher/trainer knowledge, role models, and sufficient manpower to address the clearly changing demography of special education futures.

These efforts to recruit appropriate individuals to serve the emerging ethnic and language minority population may call for specific review of areas such as certification or licensing requirements as a special educator. In the future it may be appropriate, given the percentage of the population represented by ethnic and language minorities, for all teachers, including special education teachers, to demonstrate competence in bilingual education instructional procedures or, at a minimum, English as a second language instructional techniques. Since the majority of educators are, in fact, Anglo, monolingual speakers of English, and the composition of the teaching force will not change as rapidly as the ethnic and language composition of the students to be served, there are clear implications for continuing education or in-service training. Specifically, the population of special educators who are currently mostly White must be provided with appropriate training to produce understanding of the educational and

learning implications of cultural, language, ethnic, and learning style differences in the emerging student population. One needs only to review the range of typical training agenda provided special educators to recognize that topics ordinarily considered as appropriate in training are, in fact, dramatically different from what is being suggested to prepare the special educator to serve the emerging student population.

In summary, the political organization, training, research and scholarly activities within special education as a discipline and a profession must be alerted and adapted to the powerful and long-term demographic changes occurring within this country.

Economy and Finance

One of the primary motivations for the rash of educational reform has been the need of the United States to be more competitive with international markets in the age of high technology. This is particularly clear in certain reports (National Commission on Excellence in Education, 1983; National Science Board Commission on Pre-College Education in Mathematics, Science and Technology, 1983; Task Force on Education for Economic Growth, 1983). This international emphasis seems understandable in light of the growing world economy in which very few products, even those carrying "American" images, are truly and uniquely manufactured within the United States. For example, the IBM PC contains parts made by fourteen different nations (Hodgkinson, 1985).

There are several points to be made about the international focus of reform: 1) It may be short-sighted in that, rather than uniquely and specifically competing against other countries, the United States must be prepared to interface and cooperate in an economic sense with other nations. 2) Educational reform focusing upon that particular goal, i.e., to increase the ability of students to enter the U.S. work force and become more competitive with inter-

national markets, is not particularly appropriate for non-achieving students.

Specifically, most of the educational reform activities center upon: a) implementation of some form of competency standard for advancement and graduation, requiring more specific courses in the "basics" of science, mathematics, English, and foreign language, and upgrading the performance standards acceptable in these "basic" subjects; b) increasing the length of the school day or the school year in an effort to provide more "time on task;" c) improving instructional materials available to students primarily by making them more demanding or difficult; d) increasing teachers' salaries through the mechanisms of merit pay and career ladders based on improved performance; and e) improving teacher training standards, licensing/certification (Levine, 1985). Upon analysis, these major reform procedures and requirements seem only marginally related to, or supportive of, under-achieving students. In fact, in many ways they represent additional impediments, at best, and are potentially harmful to such students, as they serve to discourage and to prevent, in some cases, the educationally disadvantaged from progressing through the system.

On the surface, such reforms appear to assure that all those who progress through the system will possess certain skills and competencies which, no doubt, would be a strong advantage to the employer and work force organizations. For example, AT&T spends some $6 million per year teaching basic literacy skills to its employees. "Work-ready high school graduates just don't exist." (Snyder, 1986). But for the student who is not progressing in the system, who may be two or three years retarded in terms of educational achievement levels in comparison to age, it is unlikely that s/he will "catch up" under these reform standards. In fact, one conclusion may be that these students simply grow discouraged and become a drop-out statistic.

Not only are we faced with the phenomenon of reduction of the work force

through increased numbers of drop-outs, but the young adult population, based upon the ages of those already in the system, will decline 2.5-3% per year until 1996, further creating a shortage of early or initial entry level workers (Snyder, 1986.)

In those instances where the reform has centered upon remediation, the remediation component has oftentimes been an afterthought, addition, and/or considered relatively minor in terms of the reform. As a result, many of the programs to support under-achieving students have been under-funded. In other instances, these measures have actually created the opportunity for further disenfranchisement and/or the creation of a unique labeling system which develops a parallel educational structure for under-achievers, similar to the special education system for handicapped youth, but without quite the extent of formalization and resource support. It appears that without the presence of adequate compensatory and remedial systems to enhance and raise the performance of those students not progressing in the system, it is very unlikely that many will obtain the job-related skills needed to meet the implicit, if not fully articulated, goal to produce the student who becomes the effective worker within the United States, capable of competing successfully within international markets.

Reform efforts related to funding of educational programs and services have been developed primarily within a cost-effectiveness framework, i.e., current expenditures buying the best or most efficient service within the immediate temporal framework. The reform movement has produced little discussion relative to the long-term or cost benefit questions associated with expenditures in education. Specifically, much of the reform centers upon the secondary level student, with very little centering on investments in educational problems of students in the earliest grades. Without major financial support and signifi-

cant program development to address early deficiencies, it seems reasonable to conclude that, regardless of how cost-effective the immediate implementation of reform may be, the long-term cost benefit results will be found wanting. The evidence is exceedingly clear that it is far more efficient to place resources into the early compensation and remediation of students than to try to effect change in student performance in the latter grades or adult life. Given the results of long-term studies of the efficacy of intervention programs such as Headstart, it is clear that such programs effect long-term differences in performance for children of "poverty" (Department of Health, Education and Welfare, 1979). However, only some 400,000 students are participants in Headstart, while at least 3,000,000 are eligible. The cost of full-scale early intervention programs is substantial and would, no doubt, require phasing. However, the greater cost savings associated with such early intervention are substantial across a number of fronts; educational expenditures, business/industry training costs, social costs of welfare, prison and security costs, loss of tax revenues and so forth.

Levine (1985) has indicated that if all males in the 25-34 age group had completed high school in 1969, they would have earned $237 billion in additional incomes over their lifetimes, and that federal and state governments would have acquired an additional $71 billion in tax revenues. In contrast, the cost of providing this additional level of education was estimated to be only about $40 billion. Each dollar of public investment for alleviating inadequate education yields about $6 in additional income to the affected population and almost $2 additional revenue to governmental treasuries. Of course, this says nothing about the societal savings, estimated to be somewhere in the $6 billion range, spent for public assistance and crime prevention. Taking the cost-effectiveness premise back to the preschool level, Levine estimates that for a single year,

the present value of preschool exceeds the cost by almost $29,000 per student, a cost-effectiveness ratio of $7 of benefit for each $1 of cost. Levine makes the point that there are few business investments which have such a large return. Yet, as we know, there is great reluctance to effect the policy decisions which allow such expenditures on early childhood education.

While deterioration of the labor force has been one specific concern of reform movements in education, its continued deterioration assures that increasing numbers of individuals in this country will continue to be disadvantaged, capable of being absorbed in only the lowest of job skill marketplaces, and/or remaining unemployed with significantly growing consumption of welfare resources. When one begins to tie the economic production variables to the demographic variables, it becomes clear that, without intervention, this country is on the road to a two-tiered system of citizenship - a mostly White, well-educated, well-employed financially secure elite - a small segment of the population - and a much larger under-educated, under-employed, limited economic-contributing, mainly ethnic mir rity population. In a democratic society, such a discrepancy between the tiers carries with it significant implications. When the largest segment of the population is poorly educated, and therefore unable to become fully knowledgeable, informed participants in the democratic process, there is potential for failure of the system of government inherent in this country's constitution and history.

A two-tiered society in which large segments are uneducated, unemployable, or minimally employed creates the necessity for such individuals to seek other means of support and compensation. The evidence appears clear that the major means of obtaining such additional support is criminal activity, for example, illegal activities related to drugs and street crime. As the discrepancy in the two tiers of society grows in the coming years, one could anticipate more

violent crime, and more crime associated with "taking from the rich" as a means of compensation and survival. Should one question the feasibility of such a dual-tiered society, recent evidence is clear that non-White unemployment rates have more than doubled those of Whites (Monthly Labor Review, 1984), with the unemployment rate for Blacks between sixteen and nineteen years of age being in the 50% range. The median income of non-Whites is substantially below that of Whites, and the expected lifetime earnings of high school drop-outs is about one-third less than those of students who graduate and less than half the amount of those who graduate from college (U.S. Dept. of Commerce, 1983a, 1983b).

The two-tiered system with its elites and non-elites provides the fertile bed for social unrest and, in fact, revolution. While these consequences appear to be drastic and perhaps unfathomable within American society, when one considers the changing demography of this country and the lack of educational attainment of certain segments of the population, it becomes believable and, in turn, anticipatory of the possible drastic consequences in the futures of this country. There appear to be few inducements to prevent the resentment, conflict, and ensuing opportunity for social and political unrest.

The two-tiered society will require increased costs of public services through additional demand for security, with pressure on the criminal justice and welfare systems. While these consequences would be severe enough within themselves, with the increasing segment of the population falling within the "lower" tier, there is the additional serious consequence of loss of tax revenues. Unemployed individuals turning to the streets for survival and for income do not produce tax revenues, yet their activities increase demands upon the public tax dollar for services. One could anticipate, as the increased demand for services develops and as tax revenues erode, that the "tax-paying" segment of society may resist the level of increases necessary to sustain

the system, further enhancing the prospects of social and political upheaval under the structure of a two-tiered society.

Yet another effect of the two-tiered society is that the jobs available between now and the year 2000 will not be in the "high tech" arena. There will be a dramatic percentage of increase in "high tech" jobs, but a relatively small net increase in actual positions. The implication is that most jobs of the future will call for individuals who have "high school equivalency or vocational technical equivalency" levels of training. The reality is, given the current and emerging proficiency of the educational system to address its largest population segment, i.e., the minority and disadvantaged student, increasing portions of our future labor force will be under-educated for the available jobs. On occasion, all of us feel frustrated with the lack of competence and proficiency of employees providing services and skills, from incorrect change or merchandise on daily shopping trips, to errors in hotel registration. These experiences serve as the forerunner of the level of frustration, waste, time and economic inefficiencies which will result from a largely untrained, incompetent work force of the future.

For those states that are successful in retaining and graduating their students, there will be a net economic gain in terms of purchasing power of the economy, increased tax base, and a less tense social structure. However, those states which fail to increase retention and graduation rates will produce a growing proportion of the work force that does not repay the costs which have been incurred in the educational process. Such individuals are less mobile, and will become a continuous and life-long liability to the state (Hodgkinson, 1985).

The concept of the under-educated youth consuming more government and agency resources than are contributed becomes even more specific when other

demographic variables are brought into force. This is a nation that is growing older. It has been amply demonstrated by Congress in the past five years that Social Security System efficacy is a serious concern. At one time, social security was a service delivery system based on approximately fifteen or sixteen workers producing Social Security payments for each person withdrawing benefits. It was a system tied to periodic increases based on cost of living and other variables to help sustain those individuals who were on the retirement side of the system. All went well as long as there were a sufficient number of workers with salaries and income to appropriately sustain the system. However, the ratio of persons supporting to persons withdrawing resources has and will continue to decline. As the work force becomes less educated and earns less, the support generated by wage-earners will be insufficient to sustain the system. It becomes increasingly important, therefore, for the traditionally under-educated minorities and disadvantaged of America to get a good education, a good job, and become substantial contributors to the Social Security System.

Educators and others concerned with the educational system have continuously felt constrained by the lack of adequate resources to accomplish the defined goals of the enterprise. Rarely have there been sufficient resources, except in instances where resources have been inequitably distributed, i.e., wealthy school districts as opposed to poor school districts. As demands increase for the various educational human and social services, there will be increased competition and politicalization of the systems. Welfare systems will be very competitive with educational systems for the diminishing available tax dollar. Not only will there be competition between human service delivery agencies, but within the educational enterprise. The competition between regular education, special education, vocational education, bilingual education, and other components of the educational enterprise will become more intense.

Additionally, competition between the various levels of the enterprise will increase such that higher education will be more competitive with community colleges, as well as public elementary and secondary schools, for the declining available tax dollar. Although higher education is clearly dependent upon other levels of the system for its own success, this has not generally been recognized. As resources become more difficult to obtain, various levels of the system, based on their need to maintain and control their own territory, will have a diminished recognition of the need for cooperation between the various levels. For example, even today, if one discusses issues such as the quality of students in higher education with professors in the "disciplines," they are rarely cognizant of the dependence of the quality of the student upon such variables as high quality teachers at the elementary and secondary school levels. Rare is the instance in which professors from the "disciplines" are supportive of colleges of education, and even more rare are the instances of financial generosity between the "disciplines" and the professional school or college of education. Yet, without high quality teachers being produced, the likelihood of increasing the quality of the student who arrives to obtain training in the "disciplines" is diminished.

It is generally perceived that educational training is directly related to job preparation. However, these views are related almost exclusively to current or existing jobs. The future defines a variety of different jobs; many do not even exist today, much less have formalized preparation programs associated with them. If the educational enterprise is designed to produce workers for existing jobs, the rapid change in job requirements for the future will make the system less efficient, and increase the training burden of the business/industrial complex. For example, in the "high tech" labor market, it has been suggested that the best trained engineer has relevant knowledge for only about three to

five years, and then must have extensive re-training. The fact that AT&T trains more than 14,000 of its workers at a cost of over $6 million per year is but one example of the incongruity between formal education and job-related training. It has been estimated that 50 million workers are in some way associated with government, and at least half of them engage in some form of annual education or training. The military, more than four million strong, reflects a known element of continuing training. Even the United Way engages more than 7,000 of its employees in management training centers every year, using its own facilities and instructional staff. It is estimated that more than 46 million adults are engaged in education beyond the high school level, and yet only 12 million are, in fact, enrolled in colleges and universities. Hodgkinson (1985) indicates that there are over 200 degrees being offered by colleges and corporations working together. However, many corporations such as Wang and Motorola now independently offer their own degree. The point of citing these statistics is that formal institutions of education find themselves under growing competition and such competition will increase in the futur .

Implications for Special Education

As the educational system responds to external and internal pressures for competency assessment of professional educators, there will be growing discontinuity between these demands and the special education system. General literacy testing is equally relevant to special educators and regular educators alike, but if the testing movement continues in the direction of relating testing to perceived performance on the job, special education professionals will experience difficulties. For example, the teacher competencies associated with producing higher achievement scores on standardized tests are totally inappropriate for the special educator working to train the moderately/severely retarded in self-care procedures.

Competency assessment as it applies to the special education student will also be dissonant to the competency assessment associated with regular education students. This particular debate already has a fairly lengthy history, having focused in the past on the issue of special education students receiving a diploma after completing their prescribed, I.E.P. goals and objectives. The question has been: are such students denied a high school diploma because they do not meet the traditional Carnegie units and/or have failed to meet the competency standards of graduation?

An obvious implication for diplomas and traditional high school graduation requirements is the fact that most jobs of the future will require lower entry level skills. Many of these lower entry level jobs have traditionally been available to the handicapped. However, as larger segments of the general population compete for these jobs, it may well be that the handicapped will not fare well in the competition. New and creative incentives will need to be developed for business and industry to remain concerned relative to the employment of the handicapped.

The relationship of competency assessment to the issue of economy and finance becomes rather clear when competency standards are tied to the career ladder, salary increases and the maintenance of the professional license or certificate to teach. Additionally, it has been proposed by more than one state to tie financing of school systems to <u>increases</u> in standardized achievement test scores of students. Clearly the relationship of money to such competency and/or standardized testing for students would severely strain the integrated relationship of special education to the rest of the system.

A parallel issue is the assumption being made by the educational reform movements that reform should precipitate enhanced "college preparatory" performance of students. These assumptions are clearly incompatible with many of the

goal and curriculum assumptions of special education. Such issues have the ability to further alienate, isolate, or to keep the complementary special education enterprise outside of the primary discipline. The competency testing of students correlates with a movement toward standardization of curriculum and instructional techniques. Such standardization is in opposition to the philosophical position of special education which recognizes and responds to individual differences. Special educators may find advocacy for the individual needs of the handicapped in direct opposition to the more powerful societal movement associated with a need for competence and standardization. A potential effect may be that special education finds imposed upon it by the larger, regular educational system, the requirement to become a tutorial or remedial program, with its specialized interventions related more to what is being taught at the student's ordinary grade level and the special education "content" required to focus upon the ordinary school curriculum, rather than the student's particular diagnosed handicapping need.

As schools become more sensitized to the student who is not progressing under "reform activities," there will be growing pressure for special education, with its historical image of "taking anyone" who doesn't succeed in the regular system, to become the general remedial arm of the educational system. These pressures run counter to other financial forces. For example, there is significant debate occurring relative to the increased number of students diagnosed as "learning disabled." The Condition of Education (1985) indicates a general decline in many of the "traditional" categories of handicapping condition, yet significant increases in the category of learning disabilities.

The increase in learning disabled, as well as the pressures that may be brought upon special education to serve broader segments of the population, will increase the costs of special education in general. These costs may result in

decision-makers who control special education resources concluding that special education is too costly a service. One adjustment that such decision-makers may consider, as it would have less impact on the traditional system, would be to restrain resources for birth to three and beyond 21 years of age programs.

A correlate result may be the allocation of significantly greater resources to serving mildly handicapped with diminished resources available for severely handicapped. If resource allocation conflict results, there may be serious debate within special education relative to the appropriate allocation of resources for the handicapped. One response of the special education system may be a renewed emphasis upon pre-referral and referral strategies as a means of maintaining the integrity of the special education system. As a part of this renewed emphasis on pre-referral and referral, there could be increased effort to "make" regular education more accountable for students. An alternative scenario may be that as special education becomes pressed for resources, a general reaction formation will develop on the part of special educators to providing services to the larger number of students who are experiencing general failure in the regular educational system. This reaction could result in special education clustering its services mainly for the more severely handicapped.

As the number of adults minimally or unemployable increases, society may press the special education enterprise to serve as the human service delivery system for such adult "failures." Some evidence of this force is already emerging with the current emphasis by the federal government and some states for "transition" programs. One possible response of special education to these increased pressures to provide services to the "failures" of the regular education system may be to become more heavily integrated with the regular education system, and to facilitate the incorporation of many of the instructional, remedial, compensatory and other techniques, which are synonymous with special edu-

cation services, into the regular education system.

As there is growing competition for limited resources, special education may not fare well. Just as education has historically been the financial "stepchild" relative to business and industry, special education has been the "stepchild" within the education system. Historically, special programs are the first place budget reductions occur. Due to the fact that special education has an extensive body of case law and legislation supporting its existence, it could be hypothesized that there will be increased political and legal confrontation as resources are re-negotiated for distribution. In times of plentiful resources, actual values are not of great consequence, but under conditions of financial exigency, true value positions are expressed. The historical experience of special educators provides evidence probably not paranoiac that special education will not fare well in the competition for resources under an environment of financial exigency and true value expression.

Extensive public resources will have to be expended in the future for areas of social welfare, security, and the criminal justice system. It is relatively clear, given the hierarchy of needs of human beings, that education in general, and certainly special education specifically, will not fare well in the competition with these units of society. Cities will be more concerned with greater police protection than the education of the handicapped.

Within institutions of higher education, special education is also the "stepchild," with the sciences and high technology "disciplines" garnering significantly greater percentages of higher education resources. Departments and units of special education have not generally been significantly valued within colleges and schools of education. As resources become more constrained, it could be envisioned that special education departments will, in fact, once again become parts of other general education components, such as curriculum and

instruction or educational psychology. There is a growing trend within higher education institutions to collapse and combine a number of program areas into larger units, and this centralization process very frequently involves the special education department.

As society grows older, and as there is a growing untrained work force, it very well may be that larger percentages of special education resources will began to track these demographic changes. That is to say, special education resources may be re-allocated in larger percentages to adult programs and programs for remediation of the untrained work force. Also related to this issue is the fact that, as the general population grows older, there will be increased longevity of the handicapped citizen, demanding the continuation of services and support for the older handicapped. There is relatively little experience with such a population, thus creating the need for research and development focused on the most efficacious means of maintaining and enhancing the performance of the older handicapped individual.

In summary, the implications for special education related to the economy and finance would appear to suggest that special education, as it is currently organized, both within the elementary and secondary school structure, as well as in institutions of higher education, will not fare well in terms of retaining and/or acquiring resources in the near future. It very well may be that special education may maintain and control its destiny to a greater extent through the directed technique of becoming more highly integrated with the primary discipline of regular education, and increasing the regular education system's dependence upon the techniques, expertise, and vertical specialized knowledge inherent in the complementary discipline of special education. The more special education services, research, and training are perceived as contributing to the general societal welfare, rather than to a more narrow unique population, the

stronger will be the position for special education in the future.

Professionalism

Currently large areas of the country are developing shortages in elementary and secondary teachers. These shortages are particularly acute in fields such as mathematics, science, special education, bilingual education and so forth. Insufficient numbers of history, English, government, and physical education teachers are also becoming commonplace. These shortages are reflective of changing circumstances. For example, some ten years ago approximately 25% of college freshmen indicated that they had intentions of pursuing a teaching career. However, in 1984-85, only 4% of entering college freshmen aspired to be teachers. Although elementary and secondary schools experienced a drop in the total number of youngsters enrolled during the past five years, the number of students enrolled in elementary schools is again on the rise, and will continue to increase throughout the next fifteen to twenty years. This enrollment increase further exacerbates the shortage of trained teachers. Further complicating the shortage is the fact that not only are fewer youth choosing education as a career, but colleges of education had their training capability diminished, and in some cases, almost eliminated during the difficult fiscal period of the 70's and early 80's. Reductions of 30-50% in the faculty staffs of colleges of education were not uncommon, even in the larger, better known institutions. Part of this reduction was the general value placed on teacher training by university administrators and policy-makers. Through this same period of fiscal difficulty, the training and research capabilities of science, engineering, mathematics, and so forth were enhanced, often at the expense of the professional college or school of education. The more immediate and visible effects are illustrated by the indication of the Superintendent of the Houston Independent School District that all of the teacher training institutions within

the state of Texas (some 65 institutions of higher education) are not producing enough trained teachers to meet the teacher manpower needs of Houston ISD, much less of the state of Texas. Similar examples can be found throughout the United States.

Further complicating the production of teachers is the fact that through the last fifteen years, there have been dramatically increased opportunities for women and minorities to enter a wider variety of professions. Specifically, education has historically had its "pick" of the best and the brightest women and minorities to be trained as teachers. A bright, capable woman wishing to pursue a professional career was, by society's values and expectations, historically limited to a choice between teaching and a small number of other professional occupations, such as nursing. If a Black person were to enter a profession in the South or Southeast, unless it were teaching or the ministry, opportunities were severely limited. Fortunately for society, but unfortunately for education as a profession, the number of professional occupations available to women and minorities has increased dramatically.

Not only has the number wishing to enter education as a profession been reduced, but those making the decision to enter education are more and more frequently represented as the least capable in terms of intellectual achievement. SAT scores for those choosing education as a profession are generally 100-150 points below those of the general university populations, and as much as 300-400 points below the SAT scores of those entering engineering, computer science, etc. (Achilles, 1985).

Educational reform legislation and policy have very frequently, in some forty-six states, included a requirement for competency testing or assessment of teachers. These assessments have either identified or are anticipated to identify approximately 10% of the teaching work force who do not meet these stan-

dards and would therefore be removed from the profession, further amplifying the manpower shortage. A large number of states have included an additional component in their educational reform procedures - the assessment of individuals prior to entering the professional preparation sequence and/or assessment by standardized testing of such individuals upon completion of their training. The actual assessment process and/or its expectation have further reduced the number of individuals choosing and entering education as a profession.

One typical response made to the teacher shortage is to define alternative routes to licensing or certification. A frequently held concept within the business and professional community, as well as in some quarters of the educational community, is that individuals who possess at least a bachelor's degree in a discipline or subject taught in schools can be certified to teach with minimal or no training associated with pedagogy. In fact, the "profession of education" has been accused of precipitating the shortage of teachers by preventing individuals with bachelor's degrees in subject areas from obtaining teaching credentials. These perceptions are held despite evidence which indicates that there are not, in fact, "teeming hordes" of such individuals wishing to enter the classroom as teachers. Alternative certification programs have historically received rather small numbers of inquiry and an even fewer number who enter the available programs. Almost miniscule numbers endure and maintain their interest in teaching once they have been exposed to the actual processes, circumstances, and environments of teaching.

It is absolutely clear that a person must have knowledge of the subject matter or discipline in order to be an effective teacher. However, knowledge of subject matter is no assurance that the individual has the skills necessary to effectively share that knowledge. That is, knowing something does not ensure that a person can teach that something. Suffice it to say that the individual

prepared only in subject or discipline content is, at best, a poorly prepared person for the typical educational classroom environment. Most failures within the classroom environment, rather than being related to lack of knowledge of the discipline, are much more likely to be related to a lack of knowledge of procedures and techniques for assessing student learning needs; individualization of instruction; management of the instructional/learning environment; discipline; development, construction and provision of instructional materials and so forth. For example, it is highly unlikely that an individual extremely knowledgeable and skilled in mathematics would be a particularly effective instructor in a classroom where a majority of the students were of limited English proficiency, unless the instructor also had training relative to appropriate adaptations of instruction for second language learners, understanding of the processes of second language acquisition, and understanding of English as a second language instructional techniques. The odds are great that this mathematics teacher will, in fact, teach in such a classroom. In a recent study, it was estimated that 42% of all children between the ages of five and fourteen are of limited English proficiency (Waggoner, 1984).

The current and emerging population of students is heterogeneous, significantly non-White, increasingly disadvantaged, of lower socio-economic status, and from widely varying cultural and language backgrounds. Yet the teaching force in this country has been, and remains, largely White. While it is not generally assumed that Anglo teachers are incapable of effectively instructing students from different language and cultural backgrounds, it is generally understood that such individuals, without appropriate training and experience, are more likely to have difficulty understanding and appropriately responding to such students. The fact remains that teacher preparation programs pay minimal lip service, for the most part, to training components which familiarize

teachers with culturally and linguistically different students and their instructional needs.

Given these variables which inhibit the production and retention of teachers, the U.S. Department of Labor estimates of the numbers of teachers who will be in place between 1984 and 1995 (will appear in the 1986-87 edition of Occupational Outlook Handbook) may be, at best, optimistic. The Department estimates that there will be a 20.3% increase in the number of elementary and secondary teachers during that ten-year period, with teacher aides and other educational assistants increasing 18.3%.

Critical to the production of teachers is access to higher education. The same U.S. Department of Labor study for 1984-1995 personnel indicates that there will be a 10.6% decline in the number of college professors. Additionally, the need for teachers will run counter to the general trend associated with college enrollments. It is predictable that the general enrollment in colleges will decrease. Of course, highly desired institutions of higher education continue to place restrictions on enrollment. This, no doubt, will continue to be the case, even in periods of low college enrollment.

The issue of enrollment deserves attention, yet the problems associated with retention of students are also of critical importance. Some studies have indicated that less than 50% of the students who choose to enroll in institutions of higher education actually complete their education within the commonly accepted timeframe of graduation. This number increases somewhat with the extended time to graduation (Boyer, 1983). However, the institution of higher education has generally been unconcerned with the problem of student retention. In fact, many institutions historically have certain "cutting courses" through which all students are funnelled in order to precipitate attrition. It is quite unusual to find institutions of higher education dedicated in any extensive way

to programs that are supportive of students in academic difficulty. In fact, the more common concept is a "sink or swim" attitude.

In order to provide some response to the growing two-tiered elite and non-elite structure of our society, institutions of higher education must increase their efforts to provide access and retention to the declining supply of well-educated young people in this country. As Hodgkinson (1985) has articulated, the "bottom line" is a rapid increase in minorities among the young population and it is here to stay as an increase. The majority of commitments made within education are not to such students. There are barriers of color, language, culture and attitude which restrict and constrain the educational progress of such students. As Hodgkinson has stated, the task will not be to lower the standards, but to increase the effort of the educational system to provide the kind of direct benefit to such students, which in turn provides the required benefit to all of American society. "The numbers are now so large that if we do not succeed, all of us will have diminished futures."

While the focus of this discussion has been upon the process of access and the provision of training to educators for the future, there are implications for "education professional organizations." Just as in the general population of educators, such organizations have reflected a mostly White advantaged membership and leadership. Sensitizing of professional organizations to cultural and linguistic issues is a relatively new phenomenon within professional organizations. These issues have brought about certain stress within those professional organizations and the education profession.

Additionally there has been a tendency to create greater specialization within professional organizations, i.e., new professions, new narrowed specializations, as well as new divisions or special interest groups, each with their own developed interests and territorial concerns. This specialization inhibits

the professional organization from discovering and addressing many of the emerging issues associated with the education profession. The education profession remains a loosely-knit consortium with diminished political action capabilities. For the most part, it is rare for educational organizations to unite on many of the emerging issues of education.

Just as there has been a call for improvement in the educational performance of students, there has recently been significant activity related to improving teacher training. Length of training, where training is provided, curriculum of training, procedures of access, procedures for exit, procedures of formative and summative evaluation, have all come under scrutiny. Of interest is the fact that much of the discussion has centered upon whether or not teachers are adequately prepared to present content knowledge. This is once again reflective of the general external concern with preparing students to be content-competent in order that they may be more proficient and competitive as a work force in the international marketplace. There has been some, yet significantly less, focus upon pedagogy and/or processes of teacher preparation. One might state that, in general, the criticism and concerns with teacher preparation have been to diminish, at best, and ridicule, at worst, the need for professional schools of education.

College of education discussions often center upon the concerns of entrance, exit, and the temporal framework for such training, i.e., should there be a fifth year of preparation after the baccalaureate to become a teacher? Should there be a five-year baccalaureate? Should there be a requirement for a master's degree prior to receiving licensure as a teacher? Should there be basic preparation with a bachelor's degree followed by endorsements and/or certification in teaching and teaching specialty areas? While no one would detract from the significance of these discussions or of the questions raised therein,

it is of interest that little of the focus has been upon the type of student who will be represented in our society of the future, or of that student's current or emerging educational needs. There has been minimal discussion of change. Most assume that the traditional professional bureaucracy is the organization of the past, present, and future.

Implications for Special Education

Special education has no greater ability than the educational profession as a whole to separate itself from the problems of manpower. In fact, because of unique personality, motivation, and humanism requirements, special education faces even greater problems with required manpower. The issues of minority representation within special education are not unique. However, special educators sometimes behave as if students of different language or cultural backgrounds are the total responsibility of other components of the educational system, rather than special education. However, as the general composition of the student body changes to reflect the demographic shifts, special educators must begin to show greater sensitivity and concern for these segments of the population. These concerns have clear implications for both special education recruitment and for special education training content. The leadership, professional activities, professional development opportunities, and politics of special education professional organizations must also begin to reflect the reality of the emerging American society and its membership.

Because special education professional preparation has additional training requirements and increased complexity of knowledge and skills associated with that training, it is perhaps even more critical for special education to be alert to manpower issues. As manpower becomes a more general problem, special education, as a complementary discipline, will experience greater competition for students and practitioners. There is historical evidence that regular edu-

cation and other components of the system often have a tendency to "siphon off" the best of those in special education for leadership and other roles within the educational enterprise. The alternative certificate program to train teachers requires particular concern and scrutiny on the part of special education. Alternative certificates focus upon the individual who has a bachelor's degree in a subject content area. Such individuals would need extensive additional training in order to be prepared to deal with the handicapped child. Since the handicapped child is often mainstreamed in regular classrooms, the lack of pedagogical training in alternative certificate programs is a serious deficit for the delivery of quality training to the handicapped student. Special educators must be particularly alert to this potential loss of quality instruction to the handicapped child in the classroom of the "alternative certified" teacher. Special educators need unique and more highly specialized skills associated with learning cognition, adaptation of instructional environment and so forth. These requirements place service limitations on the alternative certificate as an appropriate route for the training of special educators.

It may be that, in the future, special education needs to move toward more heavily integrating itself into the operations of the general education enterprise. Of course, such integration has the effect of decreasing the visibility and unique control of special education as a discipline. However, as resources, societal values, and external demands create greater pressure within the educational enterprise as a whole, special education may find itself more vulnerable and perceived as less essential to the enterprise. That is to say, the more uniquely visible, the more likely is special education to be vulnerable to environmental constraints. For example, instead of special education departments within institutions of higher education resisting, struggling, and ultimately losing "the battle" associated with maintaining separate departmental

status, it could well be that their access to students, dollars, and other resources could be enhanced by planned, conscious, negotiated interface with the primary disciplines in education.

In summary, special education, as a profession, must be concerned with the same demographic, economic, physical, and other issues associated with education more generally. Additionally, it must concern itself with its status, position, and relationship as a unique, separate, complementary discipline to the broader, general educational enterprise.

Technology

Technology occupies a unique position of excitement, improvement of the past, and hope for the future within society in general, and no less so within special education. The amazing possibilities associated with current and emerging technology create opportunities never before dreamed of relative to feasible services and adaptations for the handicapped. The emerging interface between the physical sciences and the social and educational sciences is perhaps the most exciting within technology. Within physics, biology, genetics, and cognitive psychology, there appears to be growing interest in unifying these disciplines in ways which address social, demographic and societal problems. While these interactions are in their infancy, there are clues of things to come.

Today the pace of discovery and the acceleration of new technology make it impossible for any of the sciences to remain complacent. For example, the tremendous growth and understanding of process and effect relative to the fertilization and development of the egg hold the possibility of providing special educators with great potential to understand, diagnose and intervene.

Today it is known that the ovum arrives for fertilization with its various "hemispheres." Well-mapped by biologists and geneticists, it is now known that

the northern hemisphere of the ovum is destined to become the nervous system and the skin. The southern hemisphere will develop into the digestive tract and the equatorial region gives rise to the skeletal, muscle and circulatory tissues. Work occurring relative to penetration of the various hemispheres, the "sloshing" motion, which brings materials from the southern into contact with the northern and equatorial regions following fertilization, is beginning to define and unravel the mysteries associated with normal and abnormal development of the embryo. Researchers now know that anything less than a thirty degree "slosh" or movement results in serious embryonic errors. "If the movement is small, about five degrees, the embryo has just a tail...about ten degrees it gets a tail and a trunk...at twenty degrees it gets the mid-brain structure, and at thirty degrees it gets the entire fore-brain structure" (Anderson, 1985). That is to say, there are a number of highly scheduled events associated with fertilization and, in turn, mixing of the various hemispheres of the egg. If those scheduled events are altered, either hastened or delayed, fertilization and the normal steps associated with that process result in deficits. Once we know more concerning this process, which regions of genes must get together at what time, and in what place, then the chances are enhanced that man can, in fact, intervene in the process to inhibit, correct, and/or enhance the appropriate formation of the "normal human being."

The importance of this understanding and potential intervention in the natural fertilization development process is clearly expressed by Anderson (1985) who has indicated that 25% of all hospital beds hold patients suffering from some degree of genetic abnormality. There are better than 3,000 currently known genetic diseases which have varying degrees of effect upon the normal lifestyle/functioning of individuals. There are no known cures at this time for genetic disease, but it was not until the 19th century that it was disco-

vered that various infectious diseases could be cured by antibiotics. The possibility of inserting a normal gene into the cell of a patient with defective genes implies that not only can the effect be treated, but in fact, cured. Given the rapid growth of knowledge associated with gene therapy, it has been projected that such intervention may be possible within the next fifteen years.

There has been successful gene therapy in mammals, but only as recently as 1984, when an appropriate growth hormone gene was inserted into a fertilized mouse egg. The mouse would have developed into a dwarf, but because of the intrusion of the growth hormone gene, it developed into nearly twice its projected size. The most likely first candidates for gene therapy in human beings may be those genetically-linked fatal or horribly destructive neurological diseases, such as Lesch-Nyhan Disease, which results in uncontrollable self-mutilation. These diseased states become the first candidates due to their clear uniqueness, obvious genetic relationship, and significant life effects. For example, the gene of consequence in Lesch-Nyhan Disease has been isolated from human bone marrow cells, and experimentation has brought about partial correction of the enzyme deficiency. The potential is there, and the "brave new world" concerns are neutralized by the incredibly positive effects of cure for such horribly debilitating diseases in our society.

The excitement of the computer, particularly the micro-computer, and the communication technologies for educational application have grown steadily within the past ten years. Interestingly, Withrow et al. (1986) indicate that many technological innovations have resulted from efforts to improve the methods of teaching and working with the handicapped. Conversely, many of the innovations which are particularly useful to enhance the life and learning of the handicapped are a result of technological developments such as miniaturization. The dramatic increase in the presence of the micro-computer in education is

itself a sufficiently powerful force to affect and alter the educational enterprise. Some studies (Valdez, 1986) estimate that in 1985 there were more than one million computers in place in elementary and secondary schools in this nation, with one-fourth of the nation's school teachers (500,000 plus) using computers in the classroom.

Computers

The Office of Technology Assessment (1982) indicates that 20% of K-12 schools and colleges now have video disk playback equipment, and it is estimated that by the end of 1985, more than 250,000 interactive video disk systems will be in educational use in the United States. The current emphasis and movement to utilize computers for instruction-related purposes are quite different from the abortive attempts in the early 60's to bring computer-assisted instruction into the classroom. Current research is beginning to show that computer-assisted instruction does achieve appropriate results (Valdez, 1986). Lesgold (1986) suggests that computers have two important roles in the classroom: 1) they can be successful in teaching some of the skills appropriate for the emerging information and computer age; and 2) they support students dealing with instructional arenas which have historically been too complex and beyond the normal limits of human cognition.

While there is growing general consensus of the utility and importance of computers, particularly micro-computers, in the educational environment, it is still quite unclear how to accomplish the broadest dissemination and to meet the extremely large training requirements for teachers and students to effectively utilize this new medium. The debate over teaching of programming skills versus other application skills continues to rage under the topic of computer literacy. There are other frequently debated issues associated with the computer, such as: should the computer be used primarily for drill and practice; does the micro-

computer lab place students into passive and controlled environments that are incompatible with the broader educational goals; is there equality of access to the technology for all groups? The known disparity between wealthy and non-wealthy school districts suggests inequity of access, and the socio-economic status of parents further delineates problems of equality and access.

There has been some exciting work, at this point still within the "scenario" stage, of how to enhance instruction by linking the micro-computer to other technology, such as interactive video (Savenye & Hudspeth, 1985). Beyond scenarios, there are significant applications of technology in place in some schools. For example, the Houston Independent School District established a centralized department of technology as far back as 1982 (Sturdivant, 1986). Few public school teachers or university students being trained as teachers are prepared to effectively utilize micro-computer and communication technologies (Kauffman et al., 1985). Use of the technologies and materials currently available would require considerable change in the teacher's traditional role and therefore significant changes in the preparation of teachers. Tuscher and Harvey (1985) suggest that the change in the teacher's role is from delivering instruction to becoming principally a manager or supervisor of instruction.

Emerging advances in both conceptualization and development of hardware and software will pale into insignificance the effects of current computer and communication technologies. Major computer conceptual work is occurring in two primary arenas. One relates more to hardware and the other to software system management. Hardware conceptualization is occurring in the area of parallel processing. Work for the computer is organized such that it may occur in parallel, rather than in hierarchical sequence, which is true of all current computers. Parallel processing will dramatically increase computer speed, perhaps ten or twenty times the speed of the current "super" computers which are

only now beginning to emerge in certain highly selected research centers. In fact, it's conceptualized that these jumps in computer speed are necessary and possible only if there are new conceptualizations of the computer, as the upper limits have been reached for the traditional sequential processor.

The net effect of parallel processing is not only greater speed, but an almost limitless number of variables that can be simultaneously considered in parallel, with the result being an ordering of relationships and a logical linking of variables. These links could enhance not only the understandings and insights that can be drawn from those variables, but could move beyond current human levels of cognition. It is quite clear that, as the world has grown more complex, one of the deficiencies plaguing modern society is that complexity exceeds the ordinary human limits for retention of, ordering of, and response to information in a timely and efficient manner. Such parallel processing and its almost untold limits does, in fact, begin to address this deficit of modern society.

The second area of major conceptual work at this point is associated with artificial intelligence and/or expert systems. The concept is that knowledge and/or conceptualizations are arranged or configured within computer memory, various procedures or steps required in a process are also placed within computer memory, and these components of memory are then filtered by an overlay of what is called the inference engine or the logic or rules known to be associated with the question, problem, or phenomenon under consideration. Successful AI systems, such as MYCIN and NEOMYCIN, have been around for about ten years (Shortliffe, 1976). These systems were designed to provide diagnostic information based upon clinical data relative to various forms of meningitis. However, there are few known applications of artificial intelligence and expert systems in education. The ability of the expert system to determine when, what,

and how relative to the identification of learning problems, providing individual instruction, determining interventions, and so forth, suggests a powerful tool to help the teacher truly individualize the educational process for students.

Communication Technologies

While it is somewhat artificial to speak of computer technologies and communication technologies separately, it is important to recognize that there are other technologies that can be enormously useful to the educational enterprise. There is a tendency on the part of educators to focus upon computer applications. However, educators should examine improvements in the capacities for transmission of information. For example, optical fibers, if fully exploited, have been estimated to have the capacity to carry all telephone voice traffic in the United States on a single optical fiber (Lucky, 1985). The capacity of optical fibers has, through experimentation, already been documented to be capable of carrying four billion bits of information (about the equivalent of the entire 30-volume Encyclopedia Britanica) and to transmit this volume each second. Lucky (1985) estimates that this magnitude of information transmission will likely increase five-fold within the coming decade. It is anticipated that the optical fiber will move from the telephone communication switchboard to the typical home and school as a next step, providing literally hundreds of communication channels capable of two-way interaction. Such capabilities pale into nothingness the excitement once felt with the installation of coaxial cable capable of two-way interaction for the delivery of the television signal to the home.

Connect the advances in optical fiber technology to those of satellite transmission and the educational enterprise has access to technologies which could solve many of its policy, financial, and instructional dilemmas. For

example, to combine these technologies with other technologies such as computer-driven interactive laser video disk, computer networking, and so forth, would make it totally feasible to provide students in isolated rural school districts the same quality, variety of instruction and curriculum content available to the student in the most sopnisticated, wealthy urban or suburban school district. The promise held for instructional television in the 50's and 60's can reach fulfillment in the 80's and 90's when interfaced with the emerging technologies.

Developments are occurring in a variety of locations. For example, in Texas a profitable satellite communication company distributes regular Carnegie unit credit courses, such as Honors English, German, algebra, etc., to better than 100 school districts. Alaska has been successful in bringing high quality information to almost all corners of the state via television. The state of Indiana's higher education telecommunication system connects more than forty-five educational institutions in a microwave network, providing everything from direct instruction to research and consultation. Technology for education has truly begun to realize the science fiction "Buck Rogers" potential.

Implications for Special Education

Special education has both the need and the potential to benefit from the application of technologies. However, as the educational system becomes more involved with computer technologies, and initiates the acquisition of hardware, software, and personnel training, there very well may be a tendency on the part of general education decision-makers to "overlook" special education in these technology efforts. For example, it is not uncommon to hear educators and others indicate that handicapped students do not need the latest equipment and technologies. How frequently has the special educator had to accept and/or fight for something better than the out of adoption textbooks, left-over or worn-out equipment, and so forth? When task forces and committees are formed to

develop technology application, special educators must be a part of these decision-making groups. When training is initiated for using micro-computers, special educators must remind regular education decision-makers that special educators, just as mathematics and science teachers, have the potential to effectively utilize the micro-computer. When projects are initiated to develop specific courseware for the core curriculum, special educators must remind decision-makers that the handicapped must be considered from the very first conceptualization of general curriculum courseware. It is often overlooked that the handicapped student, through mainstreaming, is a part of the regular education effort.

The computer has been conceptualized as providing the potential to solve some of the manpower and quality of teaching force problems in regular education (Norris, 1985). It can also be useful relative to the manpower issues in special education. Perhaps the point is clear and one example will suffice. The greatest manpower shortage in special education today in the Southwest and urban areas is the almost non-existence of trained bilingual special education teachers. If technology could facilitate content presentation to limited English proficient students, for example, using computer-driven interactive video laser disks, which follow known principles of second language acquisition and English as a second language instruction, it would be far better than trying to instruct such students by using a bilingual instructional aide.

One of the distinct limitations of conducting research related to the handicapped is that the range of variables associated with the handicapped is so confounding in ordinary research designs that conclusive results are illusive. The potential of parallel processing computers to handle exceedingly large numbers of variables, and eventually interfacing these variables through appropriate computer communication, provides optimism and thought for tomorrow's

research.

The development of artificial intelligence and expert systems holds tremendous promise relative to many of the problems which have been almost synonymous with serving the handicapped. For example, it is quite clear that the diagnostic system is the "gear wheel" that drives the special education system. One must be assessed to get in, to stay in, or to get out. Recognizing the ability of expert systems to consistently and dispassionately apply rules and procedures to data eliminates a number of the current plagues of diagnosis and placement decisions for the handicapped. For example, the over-representation of minorities within certain categories of special education, and the under-representation of minorities within other categories is likely reflective of the misapplication of law, procedure, and decision rules through ignorance, prejudice, haste, fatigue, and other factors. Expert systems could provide specific control points, require new or different information and/or point out illogical decision conclusions which daily plague decision-makers regarding the handicapped. The potential of such expert systems to make the IEP an individualized, carefully considered, informed instructional plan is an exciting prospect.

Experimentation is already underway to utilize the computer to select appropriate test items specific to the individual under examination (ETS Developments, 1985/86). Such selection could make individual test item adjustments for handicapping conditions, both prior to and during assessment.

The incredible storage capacity of the video laser disk system provides the potential for data collection, maintenance, and dissemination problems, which have perpetually plagued special education, to be solved. The dilemma of how to share the information in the "pupil folder" housed in central office files, with the classroom teacher(s) has continuously plagued special education. Some have

even discovered that the IEP is never seen by the person directly responsible for instruction. Television, fiber optics, and interactive video disks could make such information immediately available to all those having need for such information.

Utilization of television, communication satellites, fiber optics, interactive video disk and other technologies can address issues in special education which have historically been inadequately or inaccurately addressed. For example, such technologies bring the same level of expertise and competence to the rural environment as is present in the largest, most sophisticated, medical centers of urban areas. The potential exists to send into the home, where the television is always present, high quality parent training, and with two-way interactive capability, to provide parent feedback, relative to their handicapped child. Such intervention could begin almost at birth, being extremely cost-effective relative to parental contact and training.

Just as parents can be trained utilizing these techniques, the broadened access to quality training can serve professionals. The days of the "in-service education conference" may be numbered. Additionally, such technologies may begin to place a limited lifespan on the traditional professional association conference. The need for thousands of individuals to gather in one location where hundreds of program topics are presented, many simultaneously, disappears when there is the potential for that information to be captured, shared, and available in almost any location twenty-four hours a day.

Technology could address many of the teacher quality concerns by enhancing the ordinary clinical supervision process. For example, the clinical supervisor observing a classroom could record teacher behaviors directly into the microcomputer which would then record, analyze, process, and provide immediate feedback to the teacher via a television monitor. The process becomes almost

"biofeedback" to the classroom teacher. Additionally, such records could serve as benchmarks, diagnostic tools, and legal documents needed in the teacher improvement/teacher monitoring process. Teacher "patterns" could be overlays of preferred records of teacher performance, thus enhancing objective teacher assessment.

In the competitive employment world, where the handicapped individual is normally at a disadvantage, technology-supported performance may dramatically improve the employability of the handicapped. For example, the micro-computer could serve as an extension and expansion of memory, often an employment deficit for some mentally retarded and learning disabled individuals.

In summary, technology provides great potential for special education and the handicapped in addressing current and emerging problems and issues. The caution for special education is that these applications are not often immediately obvious to key regular education policy-makers and decision-makers. The arena of technology application alone provides powerful inducements for the special educator to become more directly involved with the regular education decision-making processes. Constraint upon technology applications in special education would be tragic as such technology offers the hope to: improve the quality of diagnostic processes; individualize instruction; make high quality expertise and instruction available in almost all geographic locations, improve research and development; improve accountability, enhance equity opportunities; and open new vistas of life opportunities for the handicapped.

Societal Values

Thomas Jefferson concluded that an educated populace is essential to a democratic form of government. Schools have traditionally been the driving force behind an educated and informed society. The current debate about schools inevitably includes discussion of the deterioration of schools measured by

standards, such as SAT scores, number of academic courses of rigor, and so forth. However, as Hawley (1985) suggests, it is a generally erroneous leap from believing that schools are deteriorating to the conclusion that the policies which direct schools are flawed. The question becomes: have schools changed for the worse, or have societal values and expectations changed?

Public schools more than other units of society require the general public to function as direct decision-makers. Voters directly express control over school budgets and, in turn programs, through bond and millage increase elections. Additionally, the constitutional, as well as historical, tradition of local control for public schools provides the structure for them to be more responsive to the public than is true of many units of government, business or industry. Therefore, the operating ethos of public schools is reflective of those values operating within society. That is to say, whatever is good or bad about public schools today is, in general, a mirror of whatever is occurring within our society. As society and its values shift, so do the values associated with the educational enterprise.

The concern is that education waxes and wanes with the political ideologies of those who possess power at a particular point in time. For example, the current president expressed a desire to substantially reduce federal spending for education. The most visible evidence was his proposed elimination of the U.S. Department of Education. Some of these changes advocated by political forces in the country reflect true ideology shifts. For example, the advocacy of the Reagan administration and Secretary of Education Bennett for the family choice or voucher plan reflects a fundamental difference in the historical position of <u>public education</u> serving as the primary vehicle of education. While the $600 voucher per child, which is currently being suggested, is insufficient for lower socio-economic students to gain admission to most private schools, it

does reflect a clear shift in values.

There is a developing perception that it can no longer be assumed that more education is beneficial to the individual or to the economy. The need for "education" as it has been known is growing more suspect, clearly, a shift from previous values that education is essential to "get ahead" (Perelman, 1986).

The economy has begun to provide an entirely different constituency for schooling. While schooling has historically been associated with the young, the concept of adult re-training is developing in order to satisfy the substantial new knowledge and re-training needs of the "high tech" economy. An additional variable which brings focus upon the adult rather than the young learner is the fact that at least 20% of the adult population is illiterate, therefore incapable, without appropriate remedial training and job-specific training, to enter the labor force. This shift in the location of training is nowhere more evident than in the estimate that $80 billion per year is spent on employees in employee training and education, an amount equal to all of higher education spending (Perelman, 1986).

As the developed countries move from an industrial based to an information/service based economy, the values associated with education begin to shift. There is no longer the need for education to produce graduates trained for specific employment, but rather individuals who are trained to be flexible, capable of multiple re-training and renewing of skills to fit constantly changing employment needs.

These shifts in societal expectations have significant implications relative to the way the educational enterprise is organized. For example, at this time, most education is provided in tightly structured vertical units called disciplines, and an individual is required to make choices among the disciplines by selecting a "major course of study." Within institutions of higher educa-

tion, departments and colleges almost stand alone in terms of their operation. It is indeed unusual and, in most cases, artificial for any interdisciplinary activity to occur. Faculty and students identify themselves specifically with the "major" or department, and there is little interface with other disciplines. Ironically, societal expectations are placing heavier demands upon the enterprise to show horizontal breadth, rather than vertical depth. The problems of the "real world" require interdisciplinary action for solution. For example, for a number of years there has been a need to have interdisciplinary decision-making in special education, e.g., participation by psychology, education, curriculum, medicine, and so forth. As such, special education serves as a unique example of interdisciplinary action. However, at an operational level, even within special education, where such interdisciplinary action is publicly required, each discipline "does its thing," and, supposedly, organizational mechanisms such as the Admission, Review, and Dismissal and/or the Annual Review, through interdisciplinary committees, integrate this knowledge for an appropriate decision relative to the handicapped student. All who have participated in this process recognize and understand the difficulty with functionally implementing this conceptual interdisciplinary practice.

As our society becomes more familiar with and more heavily utilizes the computer, it produces yet other conflicts in societal expectations and values. For example, the concept of the "electronic cottage" or the possibility of the individual working at home alone, rather than in a specific workplace with colleagues is not only more feasible, but it is becoming more commonplace. Deutsch (1985) suggests that participation in teams or work groups is actually an imposition which violates the "computer baby's inner freedom and self-expression." Deutsch presents a matrix which describes the emerging differences from pre-World War II through "computer babies" relative to key charac-

teristics of the work force. For example, one of those characteristics is associated with the preferred working environment which Deutsch describes as having progressed from a pre-World War II environment, where one worked his or her way up the ladder of success, over time to the 70's and 80's era of participatory management, quality circles and teams, to the emerging future time period in which the individual works with autonomy and little supervision.

Not only are these shifts in expectations expressed in the workplace, but other aspects of our society as well. The generation which emerged through the 50's and 60's as baby-boomers had high expectations of "making it in society," now "wants" from society, behaving as if it were entitled. The concept is "I am entitled" as a young adult to the best of material wealth - home, cars, "I am entitled" to any behaviors that I wish - driving where I want, in whichever lane, at whatever speed, and so forth.

There has been a growing tendency for society to be litigious. Almost any phenomenon or event is a potential lawsuit. Schools have reflected this shift in societal values. Rare is the school superintendent who is not currently being sued, or the school board that is not under some court order of restraint pending the resolution of litigation. Schools have the same complaints as business and industry relative to the intrusion of law and legal processes into day-to-day operations. However, as schools experience litigation and intrusion, they become less concerned and responsive to the "fear" of being sued.

Society has shifted from the "traditional family" where there is a wife and mother, who stays at home to take care of the home and children. The working mother and the level of divorce are seen in society, but are also noted in the school environment. The concept of family and parent continues to shift and change. However, schools are under pressure to maintain "tradition" and are

criticized for results of circumstances and behaviors of students reflective of societal changes.

Future expectations of society may call for quite different curriculum in schools. Expectations may be for the curriculum to focus upon such skills as the capacity to engage in negotiations, to have a global perspective, to integrate knowledge from the "disciplines," to understanding of public policy, social costs and benefits, and a realistic understanding of the "self." The emerging expectation is that school systems are responsible for teaching these skills and values (Raspberry, 1986).

The shift in the societal prestige accorded education as a discipline and particularly teachers within our society has created, in the views of some, (Gifford, 1984) many of the problems and difficulties currently associated with the educational enterprise. The loss of prestige, while precipitated by a wide range of variables, has also brought with it the loss of self-control by education. Rare is the university setting where education is perceived as an important discipline, much less a prestigious or powerful one. Ironically, as society demands greater breadth, rather than depth of specialized knowledge, education is the unit of the university most likely to be able to bring that organization into realistic interface with society. For example, universities have internal and external concerns with the need to improve the representation of minorities on university campuses. Yet, it is the educational community within these universities which has the greatest opportunity to link the growing ethnic pool of individuals to the university community. Rarely has the university sought to improve minority enrollment by developing activities and interface with schools and colleges of education which have links to the public schools.

Schools have and will continue to mirror the value changes of society.

Given the speed of change of the emerging future, it can be anticipated that significant and continuous shifts will occur in values, complicating for schools the appropriate response set to meet the expectations of society.

Implication for Special Education

Schools have and will continue in the future to reflect the values of society. The future suggests not only continuing, but more rapid, value shifts. In order for special education to "do well" under conditions of shifting values, it must, as a discipline, initiate efforts to monitor these changes in the directions of value shifts. Technological forecasting techniques which allow this type of monitoring to take place are available (Klein & Newman, 1980). Professional associations, such as the Council for Exceptional Children, could monitor societal values through formal forecasting procedures, such as issues management networks. By disseminating these data, professional associations could help the discipline respond to inevitable value shifts.

A number of the societal values described have clear implications for special education. The advocacy for and movement toward vouchers or family choice systems create a potential for special education to be one of the "left-overs" remaining in public schools. It is unusual for private schools to provide extensive special education services.

As the value of formalized education is questioned, resulting in diminished support and resources for education, more specific questioning of the value or worth of special education may develop. Special education has always had to fight the traditional value set that handicapped persons are of limited worth in comparison to the "normal" individual. Perhaps the greatest constraint on special education has always been the nature of prejudice. Federal policy reflects societal values, and, in turn, dictates federal expenditures and guidelines for education. The historical development of special education has been closely

tied to federal law, policy, and funding. As federal dollars for education are reduced, special education could expect diminished influence, control and resources.

Much of the emphasis of special education has been upon the young, and within recent years, special education has developed within its complementary discipline specific emphasis upon early education for the handicapped. As this country grows older, and as the values expressed by its older voting citizens reflect adult concerns, special education may become less visible, less important, and less valued by the voting public, due to its association with children and youth. It may be wise for special education to recognize the emphasis on adult concerns of an older population and to begin to associate itself in a variety of public ways with the adult population.

There is less value being attached to "job training." The traditional emphasis of special education and vocational rehabilitation on specific vocational job training for the handicapped may create a lack of support for special education as general societal values shift away from these interests. Special education, as a complementary discipline, must create and explore innovative and unique ways to link itself to business/industry. These links are necessary in order to fit the value orientations of that community relative to employment opportunities for the handicapped.

As societal values shift to require greater horizontal breadth and interdisciplinary interface, special education must be particularly sensitized to these shifts in order to find appropriate linkages with other disciplines. In fact, due to the historical requirement for interdisciplinary approaches in special education, special education could provide the model and, in turn, enhance its position as society places more emphasis upon interdisciplinary requirements.

As society's values become tolerant of a different working environment, such as the "electronic cottage," with work being performed at home, the independence for the worker implied by such shifts could create difficulties for special education. The traditional emphasis in special education has been upon the need for supervision and/or oversight for handicapped employees.

As the values of society shift and the "baby-boomers" reflect the feelings of entitlement and Narcissism, quite conceivably these shifts will prove incompatible with the more humanistic concerns for the "needy," including the handicapped.

The previous and current emphasis of litigation in our society has produced a desensitization on the part of school leaders, such as superintendents, to litigation. That is to say, school superintendents and boards no longer fear litigation. For special education the "fear" and implementation of litigation has been one of the more powerful forces behind the development of broader and more extensive special education services. With reduced concern for litigation, special education will experience less ability to influence and control the general system's response to the needs of the handicapped within those systems.

As there has been a general societal shift in values away from the traditional family, there may be a general reduction in the ability of parents to organize and advocate. Historically, special education has experienced its greatest support from the advocacy of parent groups. As societal values shift away from the opportunity for parent advocacy, special education may experience reduction in its power and influence.

In summary, special education as a profession and a service delivery mechanism of society, is significantly affected by societal values. Special education must accurately determine shifts in values and find mechanisms of appropriate special education service and professional activity that are responsive and acceptable within these changing societal values.

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